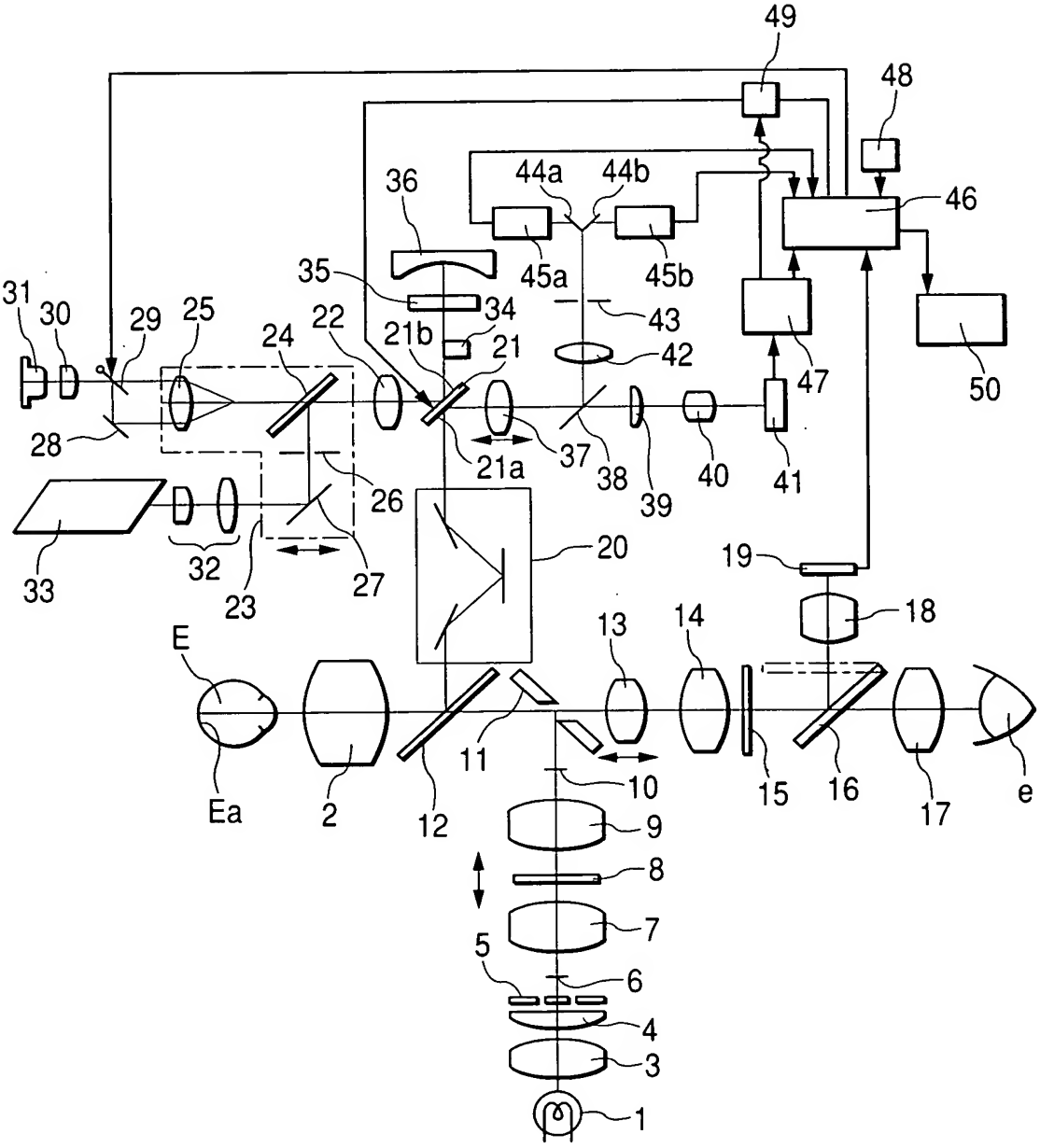
FIG. 1



US006543909B2

FIG. 2

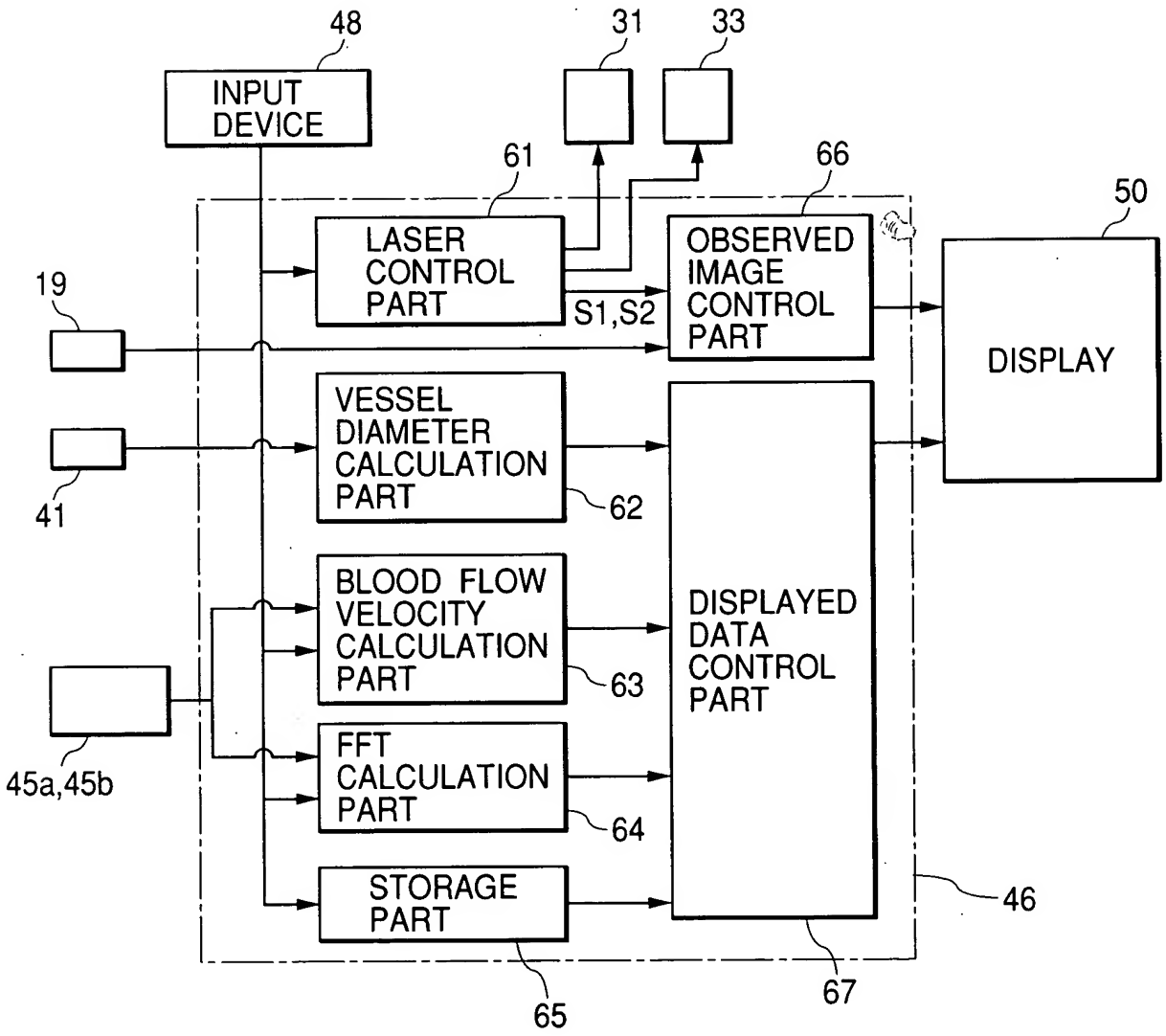
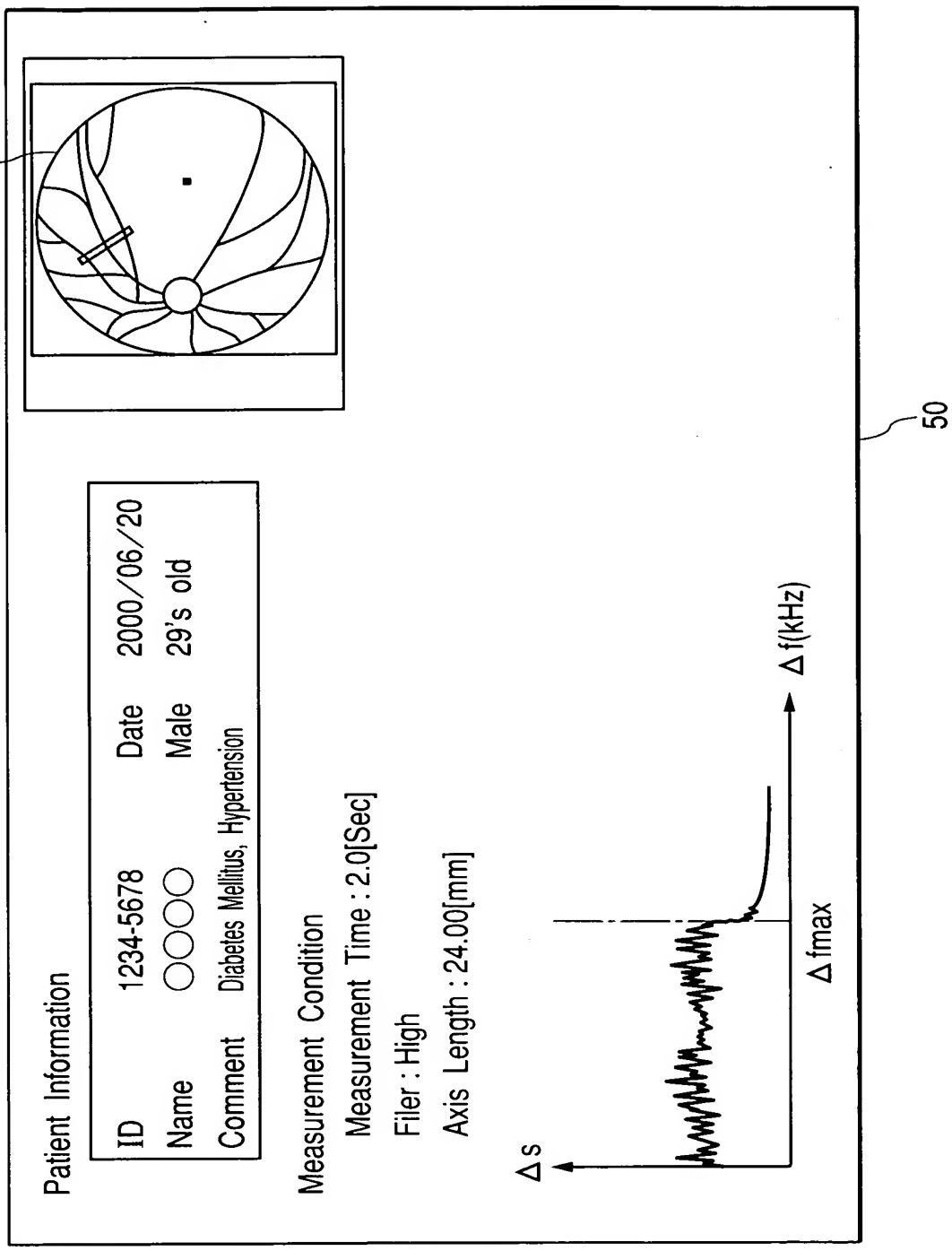

48
INPUT DEVICE
31
33
61
66
50
LASER CONTROL PART
S1,S2
OBSERVED IMAGE CONTROL PART
DISPLAY
19
41
VESSEL DIAMETER CALCULATION PART
62
BLOOD FLOW VELOCITY CALCULATION PART
63
DISPLAYED DATA CONTROL PART
45a,45b
FFT CALCULATION PART
64
STORAGE PART
46
65
67

FIG. 3


Ea'
Patient Information
ID 1234-5678 Date 2000/06/20
Name ○○○○ Male 29's old
Comment Diabetes Mellitus, Hypertension
Measurement Condition
Measurement Time : 2.0[Sec]
Filer : High
Axis Length : 24.00[mm]
Δs
Δf(kHz)
Δfmax
50

20090205,5CT5900,1

FIG. 4

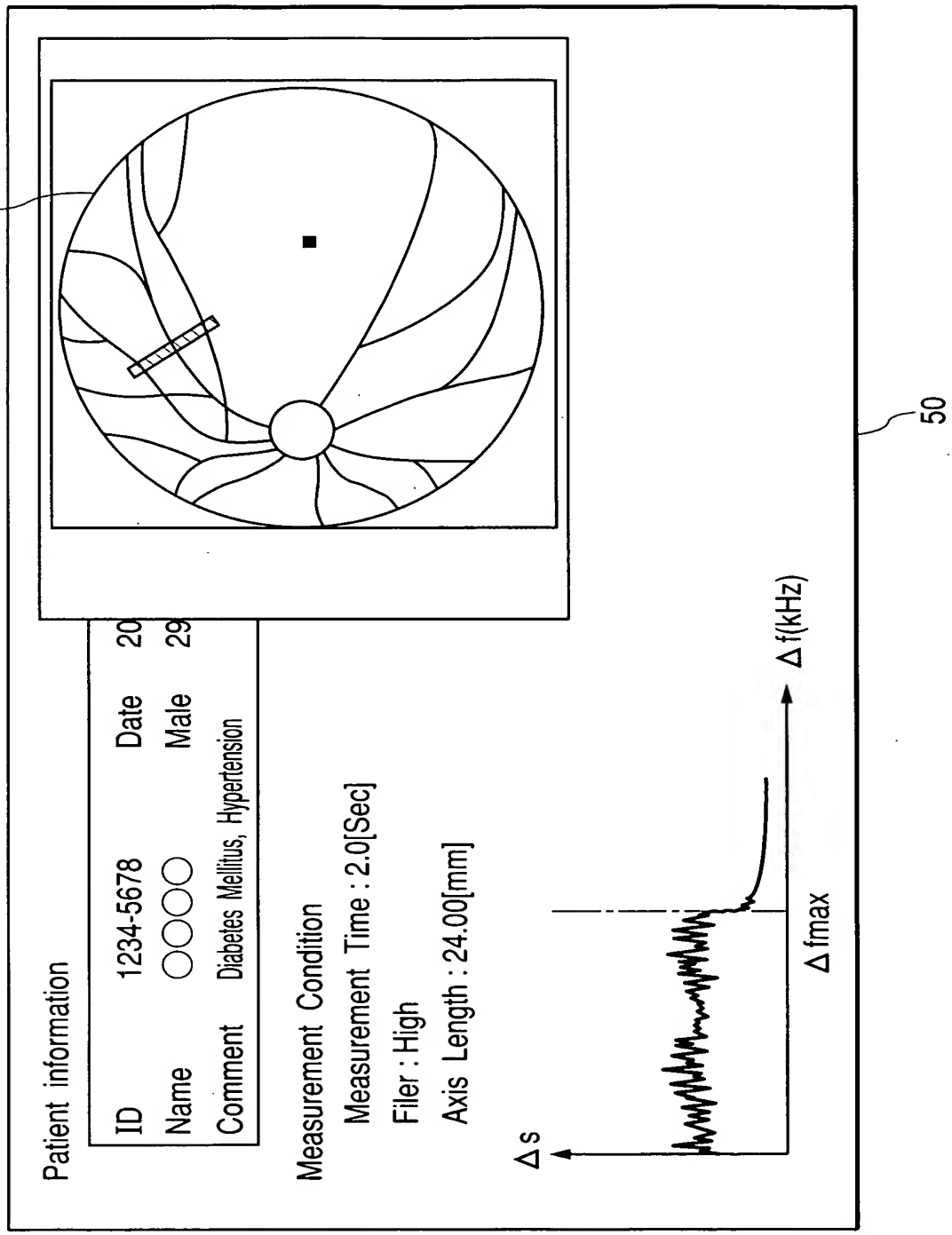


FIG. 5

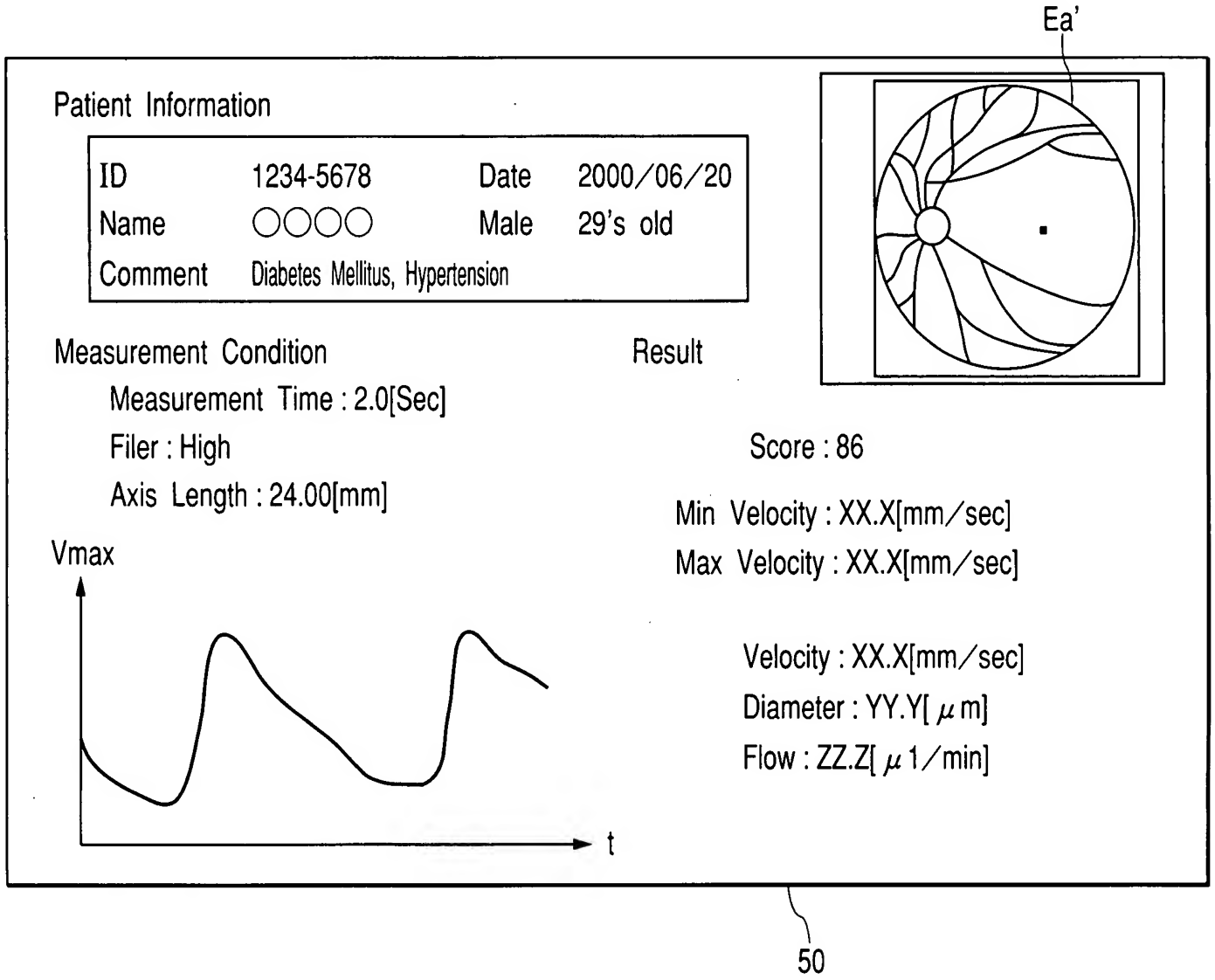

Ea'
Patient Information
ID 1234-5678 Date 2000/06/20
Name ○○○○ Male 29's old
Comment Diabetes Mellitus, Hypertension
Measurement Condition
Measurement Time : 2.0[Sec]
Filer : High
Axis Length : 24.00[mm]
Result
Score : 86
Min Velocity : XX.X[mm/sec]
Max Velocity : XX.X[mm/sec]
Velocity : XX.X[mm/sec]
Diameter : YY.Y[μm]
Flow : ZZ.Z[μl/min]
Vmax
t
50

FIG. 6

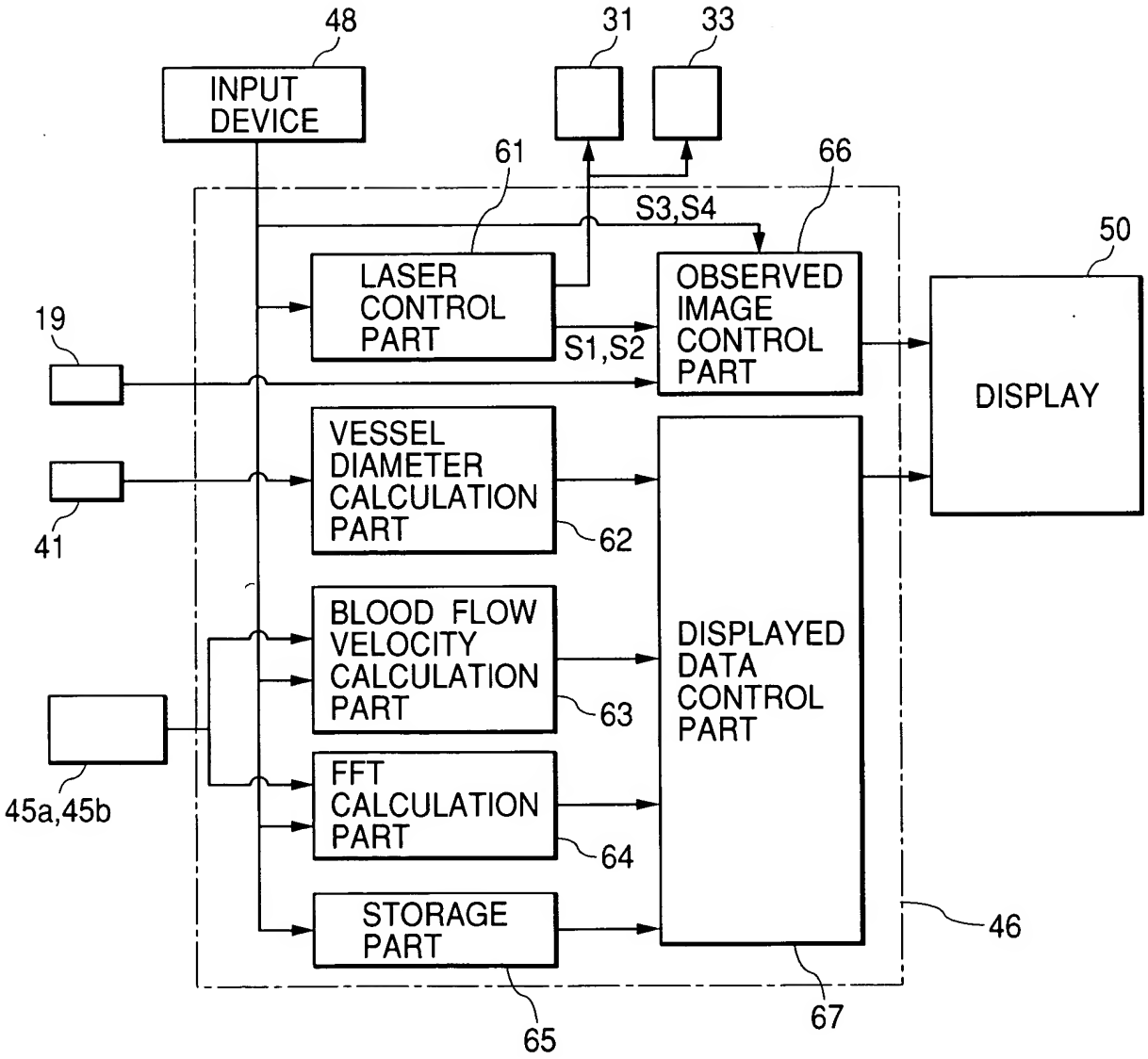

48
INPUT DEVICE
31
33
61
66
S3,S4
50
LASER CONTROL PART
S1,S2
OBSERVED IMAGE CONTROL PART
DISPLAY
19
41
VESSEL DIAMETER CALCULATION PART
62
BLOOD FLOW VELOCITY CALCULATION PART
63
DISPLAYED DATA CONTROL PART
45a,45b
FFT CALCULATION PART
64
STORAGE PART
46
65
67

FIG. 7

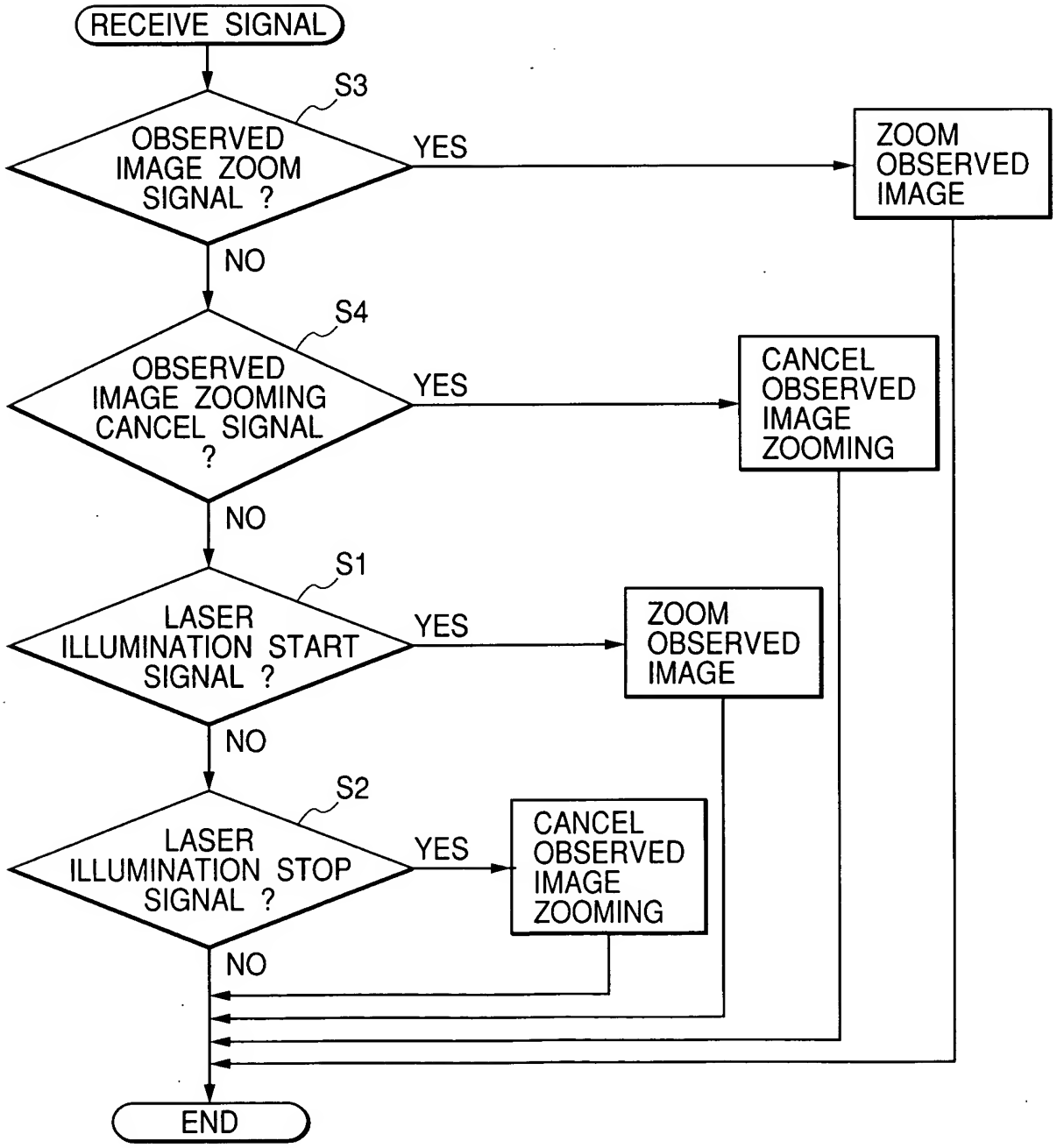

RECEIVE SIGNAL
S3
OBSERVED IMAGE ZOOM SIGNAL ?
YES
ZOOM OBSERVED IMAGE
NO
S4
OBSERVED IMAGE ZOOMING CANCEL SIGNAL ?
YES
CANCEL OBSERVED IMAGE ZOOMING
NO
S1
LASER ILLUMINATION START SIGNAL ?
YES
ZOOM OBSERVED IMAGE
NO
S2
LASER ILLUMINATION STOP SIGNAL ?
YES
CANCEL OBSERVED IMAGE ZOOMING
NO
END

FIG. 8

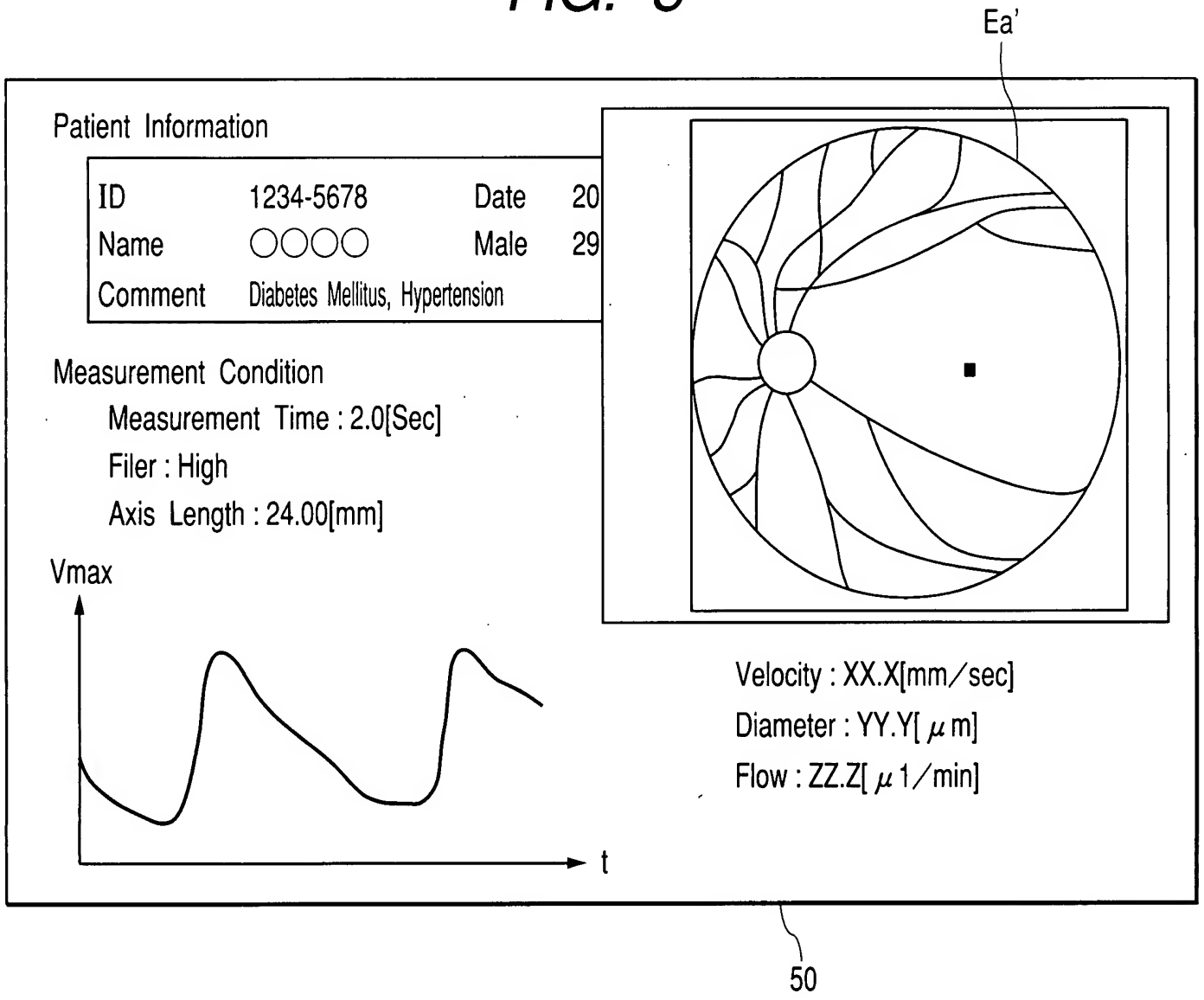

Ea'
Patient Information
ID 1234-5678 Date 20
Name ○○○○ Male 29
Comment Diabetes Mellitus, Hypertension
Measurement Condition
Measurement Time : 2.0[Sec]
Filer : High
Axis Length : 24.00[mm]
Vmax
t
Velocity : XX.X[mm/sec]
Diameter : YY.Y[μm]
Flow : ZZ.Z[μl/min]
50

FIG. 9

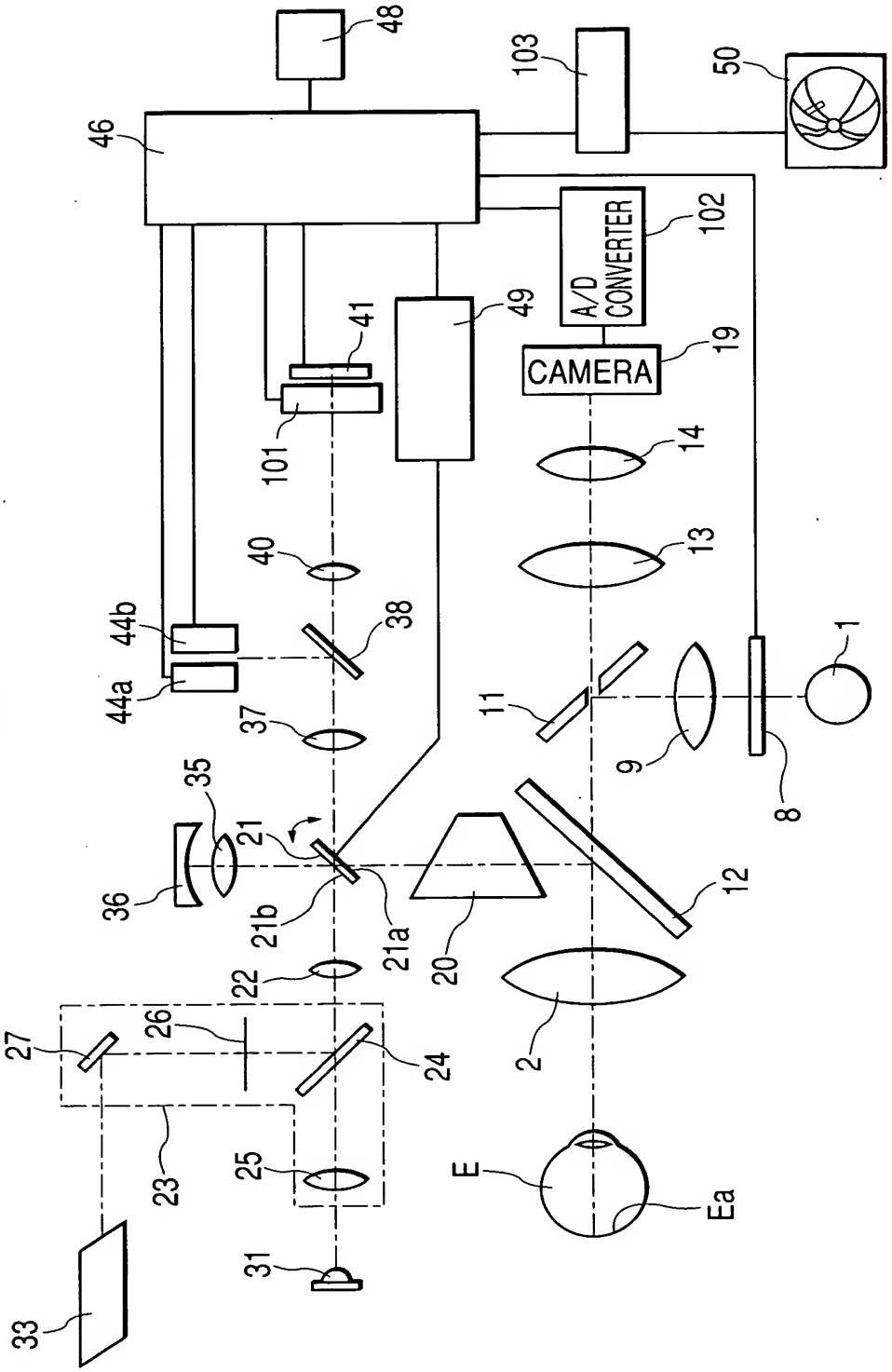

48
103
50
46
A/D CONVERTER
102
49
41
CAMERA
19
101
14
40
13
44b
38
1
44a
37
11
9
8
35
21
36
21b
21a
20
12
22
2
27
26
24
23
25
E
Ea
31
33

FIG. 10

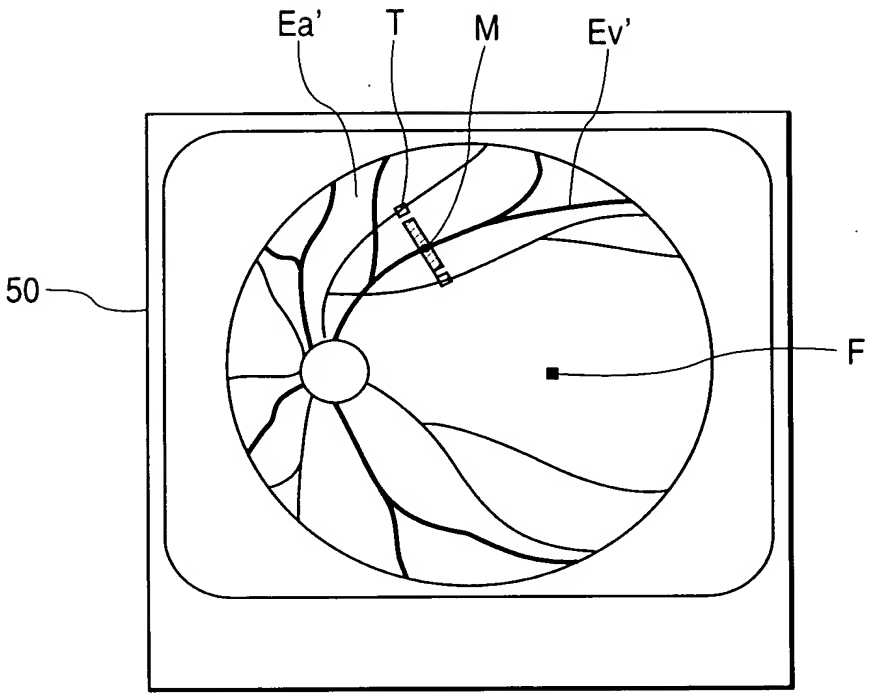


FIG. 11

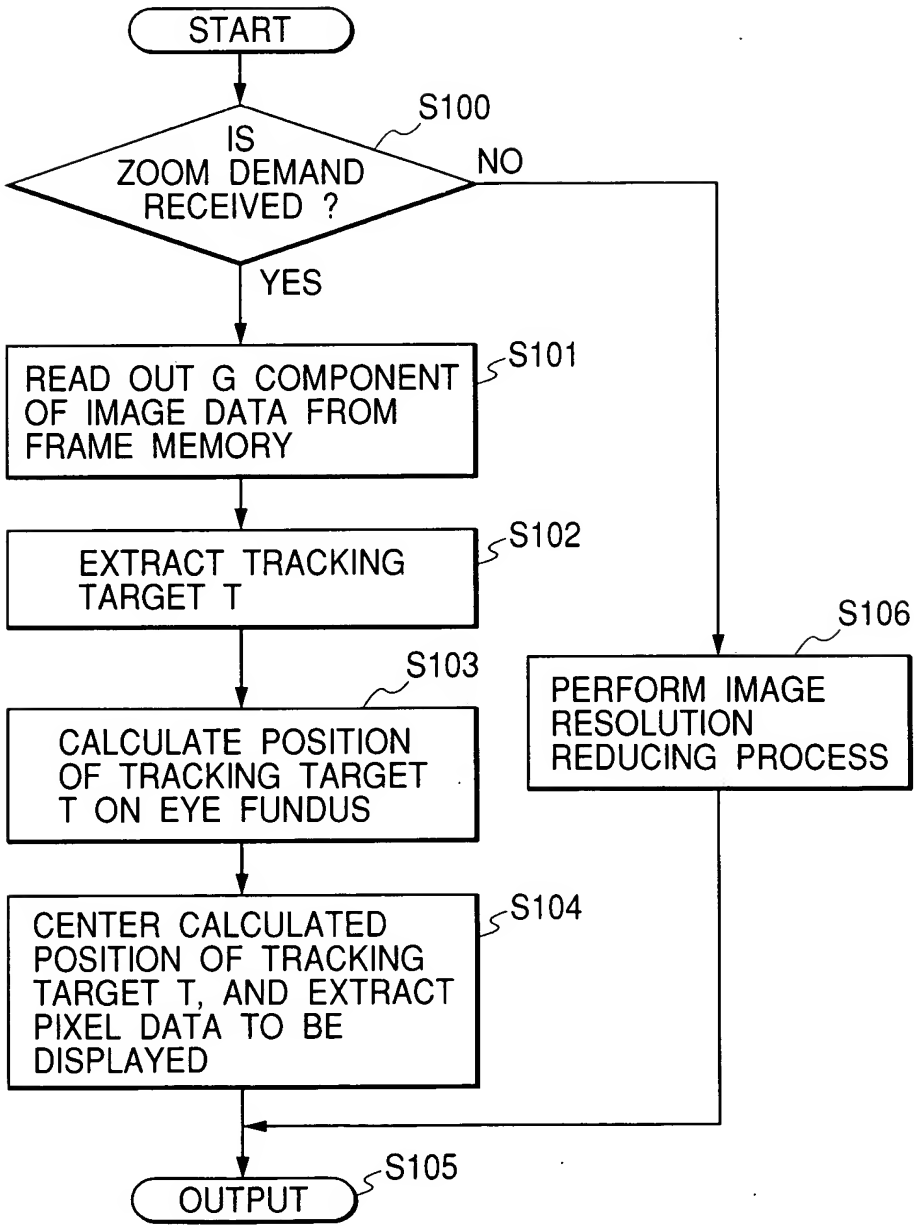

START
S100
IS ZOOM DEMAND RECEIVED ?
NO
YES
READ OUT G COMPONENT OF IMAGE DATA FROM FRAME MEMORY
S101
EXTRACT TRACKING TARGET T
S102
S103
CALCULATE POSITION OF TRACKING TARGET T ON EYE FUNDUS
S104
CENTER CALCULATED POSITION OF TRACKING TARGET T, AND EXTRACT PIXEL DATA TO BE DISPLAYED
S106
PERFORM IMAGE RESOLUTION REDUCING PROCESS
OUTPUT
S105

FIG. 12

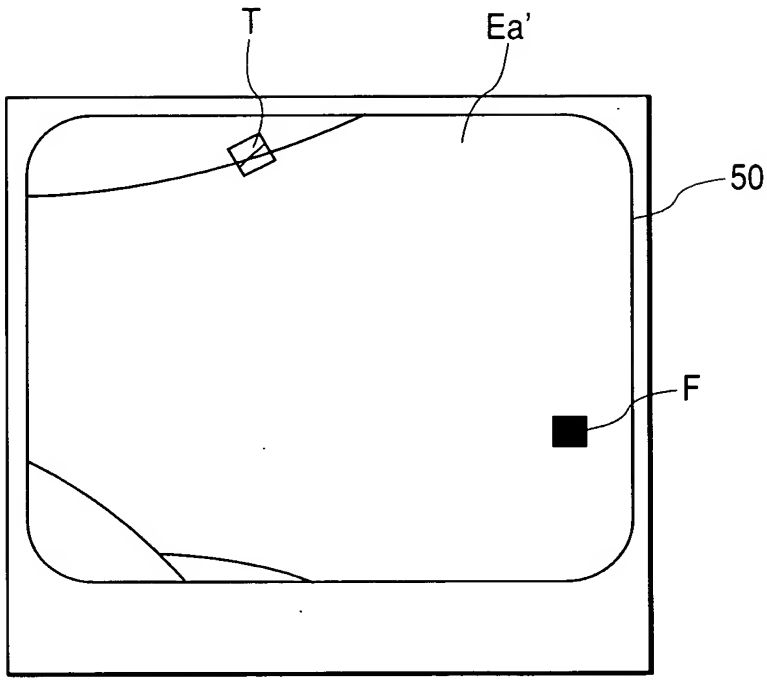


FIG. 13

	x[n]	x[n+1]	x[n+2]	x[n+3]	x[n+4]	x[n+5]	x[n+6]	x[n+7]	x[n+8]	x[n+9]	x[n+10]	x[n+11]	x[n+12]	x[n+13]	x[n+14]	x[n+15]
y[n]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
y[n+1]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
y[n+2]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
y[n+3]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
y[n+4]	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
y[n+5]	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
y[n+6]	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0
y[n+7]	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
y[n+8]	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
y[n+9]	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
y[n+10]	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0
y[n+11]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
y[n+12]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
y[n+13]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
y[n+14]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
y[n+15]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

EP 0 865 155 A2

FIG. 14

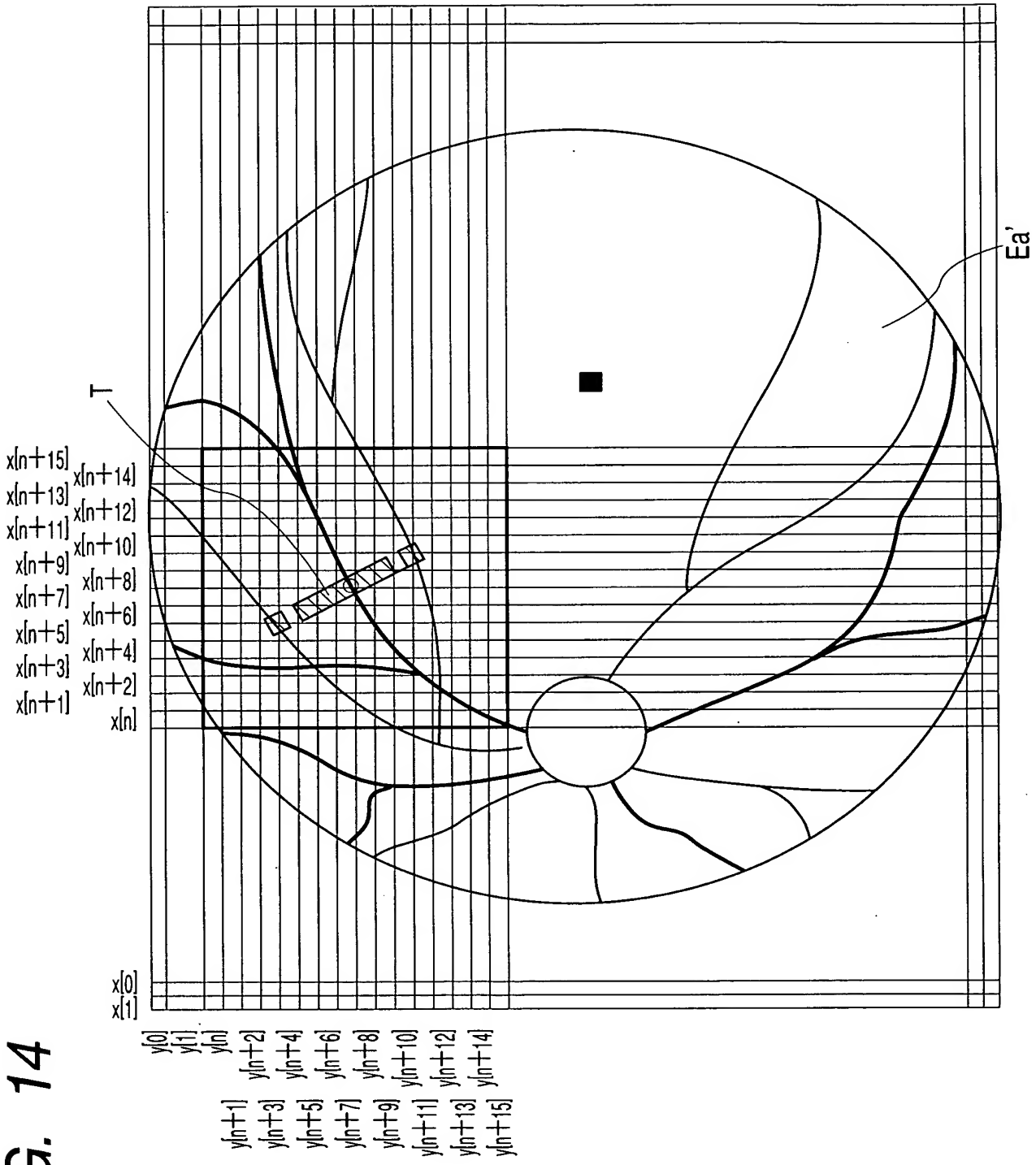

T
Ea'
x[n+15]
x[n+13]
x[n+11]
x[n+9]
x[n+7]
x[n+5]
x[n+3]
x[n+1]
x[n+14]
x[n+12]
x[n+10]
x[n+8]
x[n+6]
x[n+4]
x[n+2]
x[n]
x[0]
x[1]
y[0]
y[1]
y[n]
y[n+2]
y[n+4]
y[n+6]
y[n+8]
y[n+10]
y[n+12]
y[n+14]
y[n+1]
y[n+3]
y[n+5]
y[n+7]
y[n+9]
y[n+11]
y[n+13]
y[n+15]

FIG. 15

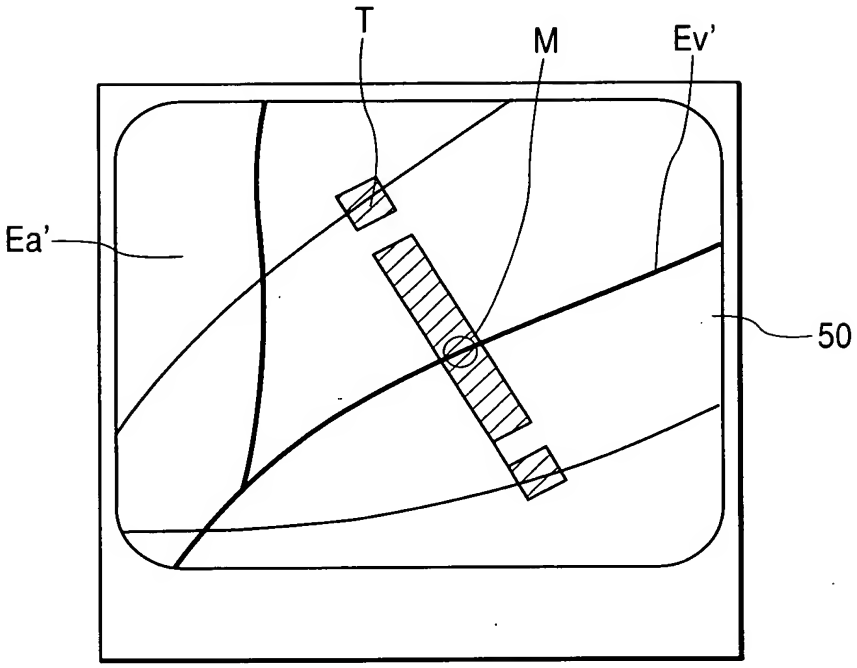
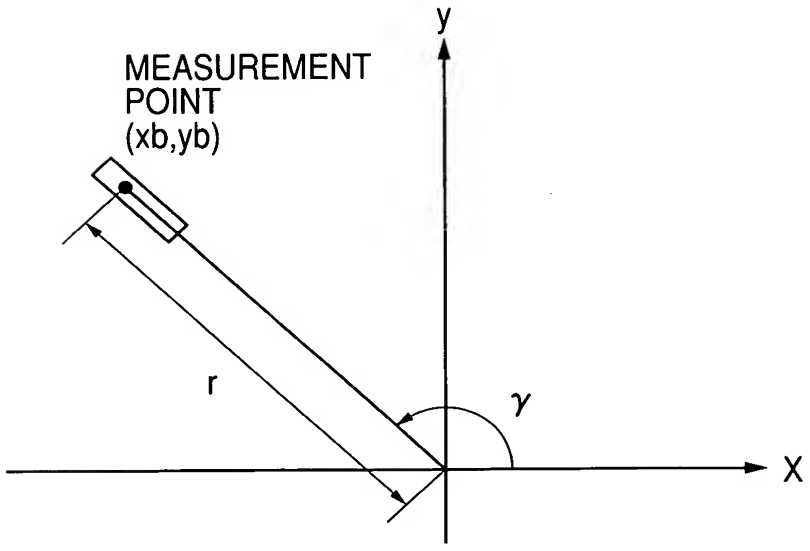
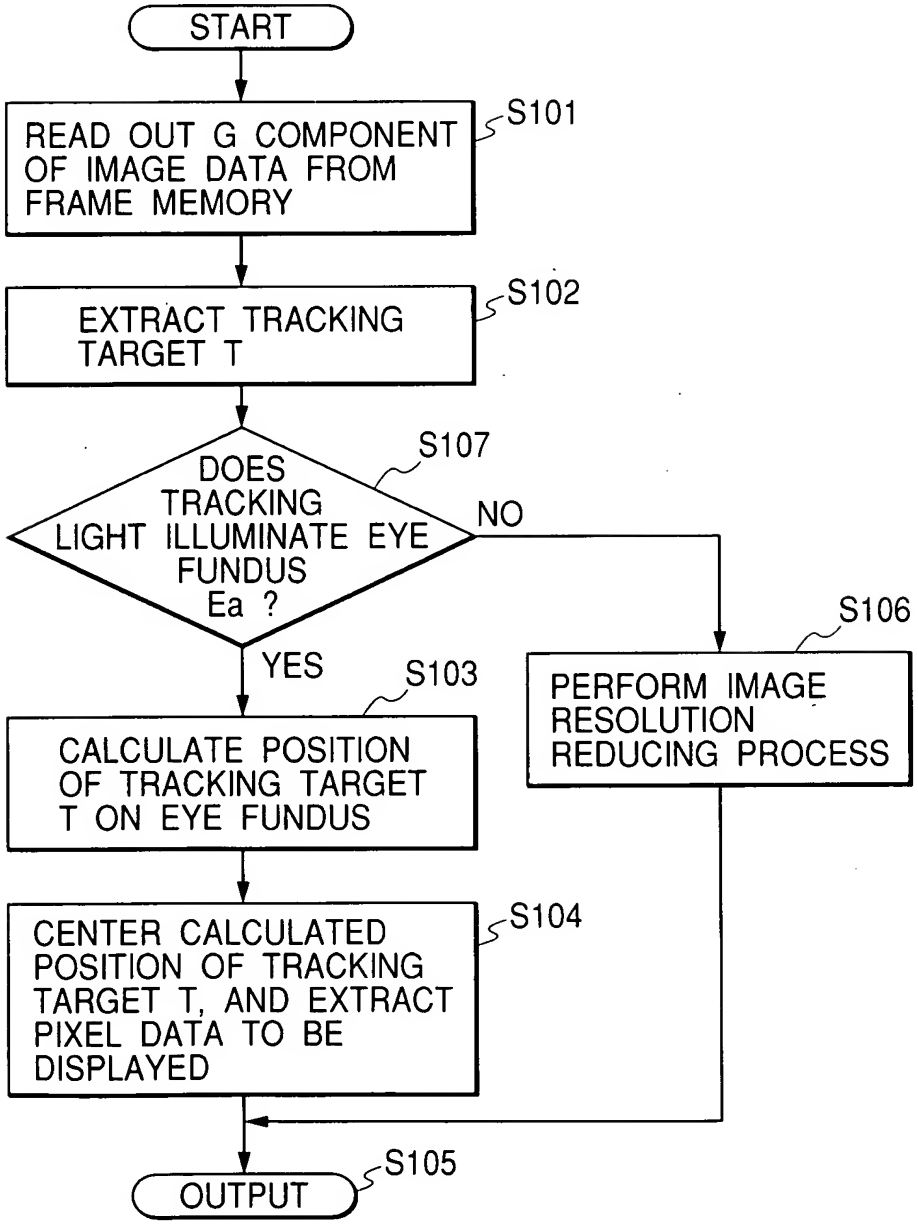


FIG. 16



EP0861459.0025502

FIG. 17



EP0858430.D20200